BTA04 T/D/S/A
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SENSITIVE GATE TRIACS

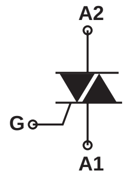
TO-220AB

FEATURES

- Very low I_{GT} = 10mA max
- Low I_H = 15mA max
- BTA Family:
  Insulating voltage = 2500V$_{(RMS)}$
  (UL recognized: E81734)

DESCRIPTION

The BTA/BTB04 T/D/S/A triac family are high performance glass passivated PNPN devices.
These parts are suitables for general purpose applications where gate high sensitivity is required. Application on 4Q such as phase control and static switching.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 90°C	4	A
		BTB	Tc = 95°C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3ms	42	A
			tp = 10ms	40	
I^2t	I^2t value		tp = 10ms	8	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply: I_G = 50mA dI$_G$/dt = 0.1A/µs		Repetitive F = 50Hz	10	A/µs
			Non repetitive	50	
Tstg Tj	Storage and operating junction temperature range			-40 to +150 -40 to +110	°C
Tl	Maximum lead soldering temperature during 10s at 4.5mm from case			260	°C

Symbol	Parameter	BTA / BTB04-			Unit
		400 T/D/S/A	600 T/D/S/A	700 T/D/S/A	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 110°C	400	600	700	V

THERMAL RESISTANCE

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	4.4	°C/W
		BTB	3.2	
Rth (j-c) AC	Junction to case for 360° conduction angle (F = 50Hz)	BTA	3.3	°C/W
		BTB	2.4	

GATE CHARACTERISTICS (maximum values)

$P_{G(AV)}$ = 1W P_{GM} = 40W (tp = 20µs) I_{GM} = 4A (tp = 20µs) V_{GM} = 16V (tp = 20µs)

ELECTRICAL CHARACTERISTICS

Symbol	Test conditions		Quadrant		BTA / BTB04				Unit
					T	D	S	A	
I_{GT}	V_D = 12V (DC) R_L = 33Ω	Tj = 25°C	I - II - III	MAX.	5	5	10	10	mA
			IV	MAX.	5	10	10	25	
V_{GT}	V_D = 12V (DC) R_L = 33Ω	Tj = 25°C	I - II - III - IV	MAX.	1.5				V
V_{GD}	V_D = V_{DRM} R_L = 3.3kΩ	Tj =110°C	I - II - III - IV	MIN.	0.2				V
tgt	V_D = V_{DRM} I_G = 40mA dI_G/dt = 0.5A/µs	Tj = 25°C	I - II - III - IV	TYP.	2				µs
I_L	I_G = 1.2I_{GT}	Tj = 25°C	I - III - IV	TYP.	10	10	20	20	mA
			II		20	20	40	40	
I_H*	I_T = 100mA Gate open	Tj = 25°C		MAX.	15	15	25	25	mA
V_{TM} *	I_{TM} = 5.5A tp = 380µs	Tj = 25°C		MAX.	1.65				V
I_{DRM} I_{RRM}	V_{DRM} rated V_{RRM} rated	Tj = 25°C		MAX.	0.01				mA
		Tj = 110°C		MAX.	0.75				
dV/dt *	Linear slope up to V_D = 67% V_{DRM} gate open	Tj = 110°C		TYP.	10	10	-	-	V/µs
				MIN.	-	-	10	10	
(dI/dt)c*	(dI/dt)c = 1.8A/ms	Tj = 110°C		TYP.	1	1	5	5	V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1

PRODUCT INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification			
	A	V	T	D	S	A
BTA (Insulated)	4	400	X			X
		600	X	X		
		700	X		X	
BTB (Uninsulated)		400	X	X		
		600	X		X	

ORDERING INFORMATION

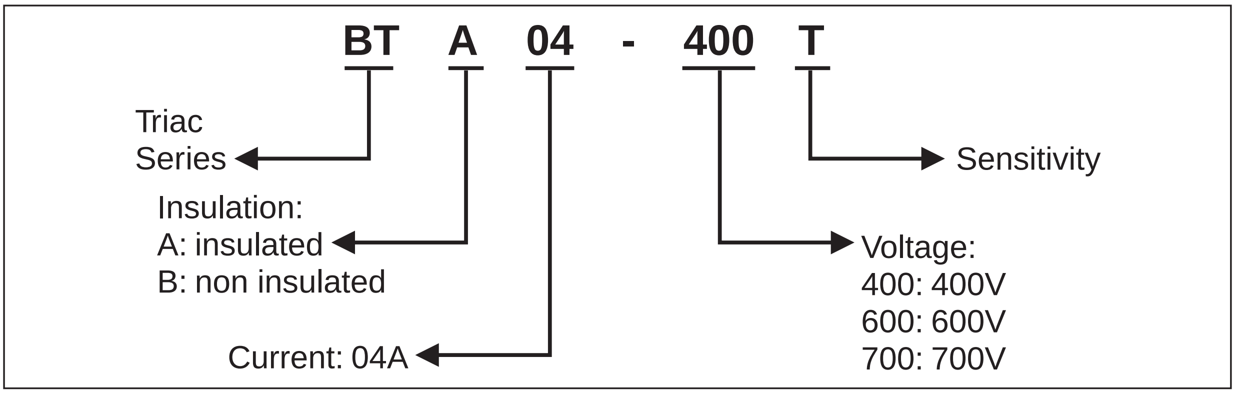


Fig. 1: Maximum RMS power dissipation versus RMS on-state current (F = 50Hz).(Curves are cut off by (dI/dt)c limitation)

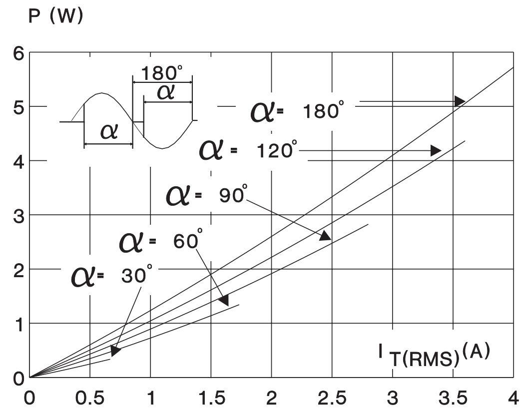


Fig. 2: Correlation between maximum RMS power dissipation and maximum allowable temperature (Tamb and Tcase) for different thermal resistances heatsink + contact (BTA).

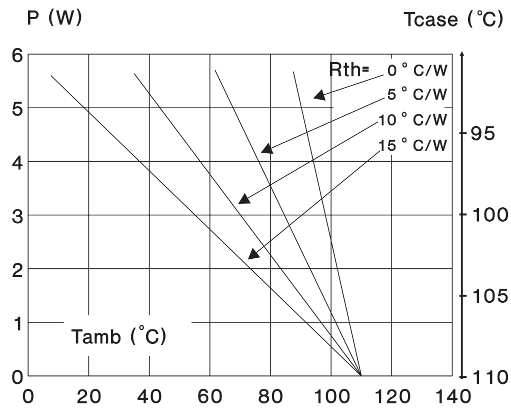


Fig. 3: Correlation between maximum RMS power dissipation and maximum allowable temperature (Tamb and Tcase) for different thermal resistances heatsink + contact (BTB).

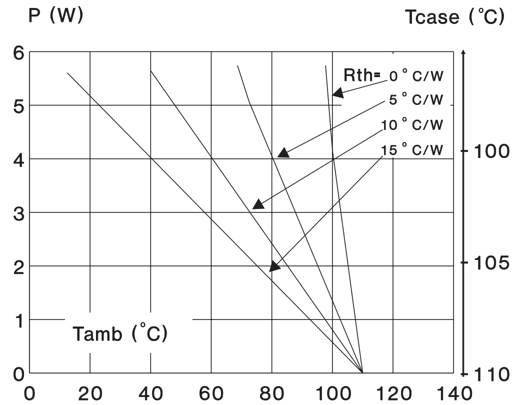


Fig. 4: RMS on-state current versus case temperature.

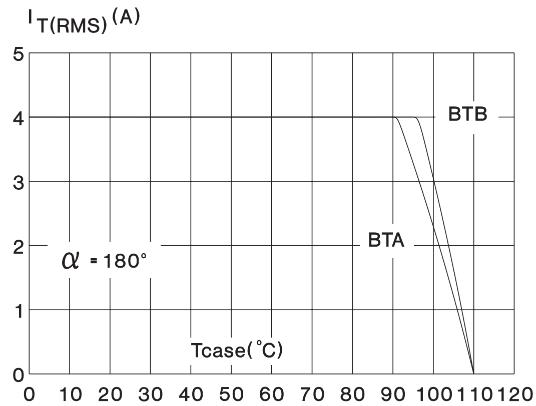


Fig. 5: Relative variation of thermal impedance versus pulse duration.

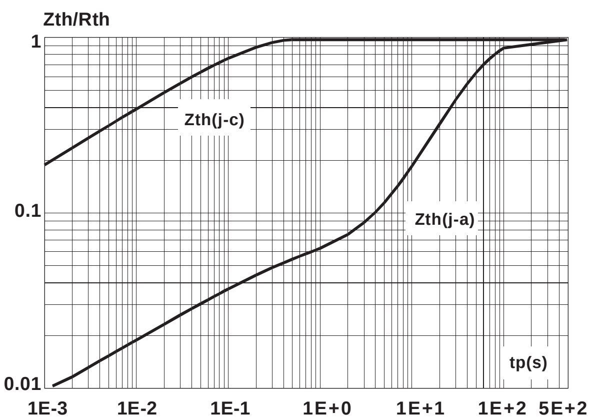


Fig. 6: Relative variation of gate trigger current and holding current versus junction temperature.

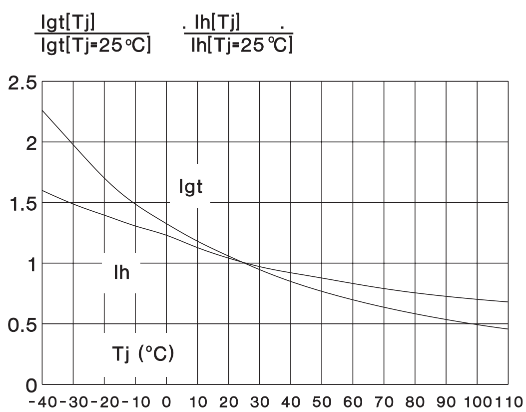


Fig. 7: Non repetitive surge peak on-state current versus number of cycles.

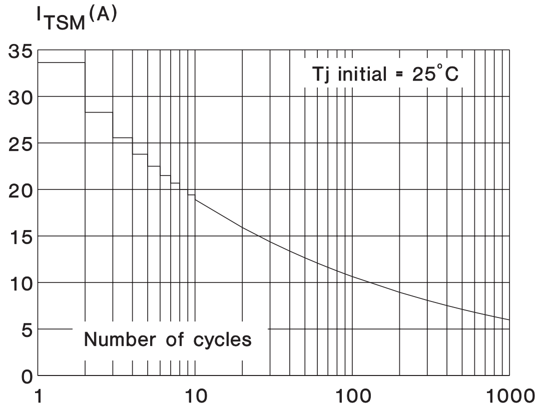


Fig. 8: Non repetitive surge peak on-state current for a sinusoidal pulse with width: t ≤ 10ms, and corresponding value of I^2t.

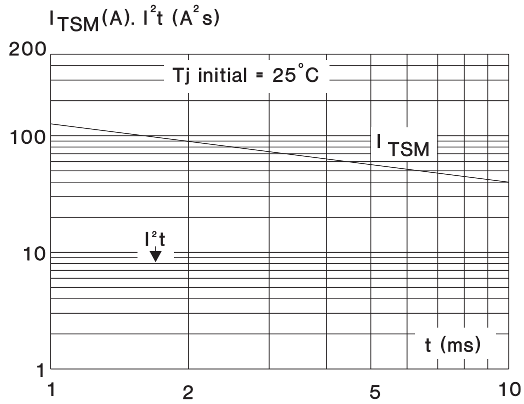


Fig. 9: On-state characteristics (maximum values).